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REMARKS

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Claims 1-13 and 20-28 are pending in the application. Claims 1-3, 5-6, 10, 12-13, 23-25, and 28 have been amended in a manner suggested by the Examiner. Since the amendments place the application in condition for allowance, remove issues in the event of an appeal, and/or do not require further searching, entry is respectfully requested. Favorable reconsideration of the subject patent application is respectfully requested in view of the amendments and comments herein.

I. The Amendments

Claim 1-13 and 20-28 have been rejected under 35 U.S.C. §112, first paragraph, for enablement reasons with regard to the meaning of the term "heating." Claims 8-9 have been rejected under 35 U.S.C. §112, second paragraph, based on similar grounds. The above amendments clarify the meaning of the claim language as far as what comprises "heating." As these amendments have been suggested by the Examiner and put the claims in condition for allowance, it is kindly requested that the above amendments be entered.

II. Enablement Rejection

Claims 1-13 and 20-28 have been rejected under 35 U.S.C. §112, first paragraph, for enablement reasons with regard to the definition Chinese kaolin. The Examiner rejects to the claim of "Chinese kaolin" due to the mention of kaolin from a specific province, Shanxi, recited in the specification. The difference that is being defined is a difference in geological/chemical composition. In the art, such a difference is typically highlighted by referring to the geographic source of the mineral in question. The only time the specification refers to Shanxi is to state that those in the art SOMETIMES refer to Chinese kaolin as Shanxi kaolin (p. 2, ln. 19). Chinese kaolin still remains the most accurate and common description in the art. It should be emphasized that these

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labels are terms of art which have meaning to those who are skilled in the art of mineral processing. This is no different than the situation where most Bourbon whiskey produced in the United States is not actually produced in Bourbon County, Kentucky; however, the term has a well understood meaning to a style of whiskey. In the same manner, the terms Chinese kaolin and Shanxi kaolin are synonyms and Shanxi kaolin may be used to describe kaolin of similar composition and properties but actually originates from outside Shanxi province. Therefore, the specification fully describes and enables the use of the term "Chinese kaolin."

III. Obviousness Rejection over Mixon

Claims 1-9, 11-13, and 23-28 are rejected under 35 U.S.C. §103(a) over Mixon (U.S. Patent 4,246,039). Mixon relates to a more energy efficient process for making calcinated kaolin involving forming a slurry of kaolin, spray drying the kaolin, pulverizing the kaolin, calcining the kaolin, then pulverizing the kaolin again. The starting material is a gray Georgian crude (see Col. 5, line 10).

The invention relates to a process providing any of (1) higher opacity, (2) higher brightness, and/or (3) higher surface area/oil absorption for any given calcination temperature compared to known processes using Chinese kaolin as a starting material. There are at least two key differences between Mixon and the claims of the invention.

The first difference is starting material and the second difference is multiple pulverizations before/after calcination. In regards to the first difference, the Examiner states that "one skilled in the art would have appreciated that any type of kaolin can be processed in" the manner according to Mixon. Mixon teaches a method to reduce energy costs by capturing and using heat normally wasted during the later calcination step for drying during the earlier drying step. This aim of Mixon is practicable regardless of the chemical composition of the kaolin used. It is known in the art that kaolin from different geographic areas has varying chemical compositions, particularly as it relates to iron and carbon/organic based impurities. It is also known in the art that optical properties of kaolin (e.g. brightness) are affected

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by the presence of transition metal ions and organic/carbon impurities. Chinese kaolin has higher levels of organic impurities and lower levels of transition metal ion impurities relative to Georgia kaolin. This is a real chemical difference between the two starting materials and one skilled in the art would not assume that the same techniques would be the most successful in improving qualities such as brightness between the two by reducing impurities. Mixon's only teaching is a process to save energy using a well-known technique of processing kaolin. There is no teaching on how to modify the process to increase aims (1), (2), or (3) of the current invention and to achieve these aims at LOWER calcination temperatures.

As to the second difference, the Examiner contends "the use of multiple pulveration steps is obvious to the skilled artisan in order to ensure that the desired particle size is obtained." Applicants respectfully disagree. The use of multiple pulveration steps before calcination is not obviously equivalent to use of single pulveration steps since obtaining a specific particle size is not the aim of the process of the invention. While particle size is important in obtaining (1) increased opacity, (2) increased brightness, and (3) increased surface area, it is only a factor.

Another major factor is decreasing the amount of organic/carbon impurities. Calcination induces a chemical/physical change in the kaolin, mainly a change in crystal structure. While not wishing to be limited to any one theory, pulverization before the heating stage for calcination likely exposes more carbon/organic compounds to oxygen wherein such compounds are oxidized and vaporized and thereby allowing the calcination process to proceed more effectively. To what affect this approach would have in decreasing carbon contaminates and increasing the desired properties of the resulting product is not known to one practicing the art without undertaking extensive experimentation. There is no teaching in Mixon that pulverizing multiple times before calcination will produce this result or be useful in increasing brightness ect. for kaolin with higher carbon/organic impurities than those found in Georgia kaolin. Additionally, a counter-intuitive result is actually obtained wherein at least two distinct pulverization steps rather than simply one longer pulverization step are required to obtain the desired benefits (p. 8, ln. 11-13). Again, Mixon does not provide any teaching or motivation to introduce multiple pulverization

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steps before calcination as a remedy for carbon/organic impurities.

Due to the extensive differences between Mixon and the claims, and due to the fact that Mixon fails to teach or suggest all of the features of the claims, Mixon CANNOT render the claims obvious.

IV. Obviousness Rejection over Mixon/Maxwell

Claim 10 is rejected under 35 U.S.C. §103(a) over Mixon in view of Maxwell (U.S. Patent 6,238,473). Maxwell relates to applying pressure to a kaolin clay to INCREASE the bulk density. Maxwell thus does not cure the deficiencies of Mixon.

Maxwell teaches applying pressure to kaolin clay to increase the bulk density. Maxwell contains no teaching for providing any of (1) higher opacity, (2) higher brightness, and/or (3) higher surface area/oil absorption for any given calcination temperature compared to known processes using Chinese kaolin as a starting material. Maxwell additionally does not contain any teaching to use multiple pulverization steps BEFORE calcination to expose organic/carbon impurities found in greater concentrations in Chinese kaolin. Regardless of the obviousness or unobviousness of the effect of pulverization on decreasing bulk density, claim 10 as a whole remains unobvious and the element of bulk density change is merely a limitation on the amount of density change desired to practice the invention. Since Maxwell does not remedy any of the deficiencies of Mixon, any combination of Mixon and Maxwell does not cure any of the defects mentioned above.

V. Obviousness Rejection over Fanselow

Claims 20-22 are rejected under 35 U.S.C. §103(a) over Fanselow (U.S. Patent 3,586,523). The Examiner recites case law illustrating the rule that "product-by-process" claims are not limited by process limitations and do not distinguish the product even though made by a different process. This rule holds only in the case where the product of the process in question is indeed identical. The Examiner specifically cites *In re Thorpe*, 227 U.S.P.Q. 964 (Fed. Cir. 1985).

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In *Thorpe*, the product in question was a discrete chemical compound made via a different process than the prior art.

Here, the product in question is not a discrete chemical compound, but is rather a processed, naturally-occurring mineral made up of many constituents. As discussed above, kaolin from different geographic regions vary considerably in their composition especially in regard to impurities, which affect important characteristics of the mineral. Therefore, the product of the process of the invention cannot be considered the same as product disclosed in Fanselow. Although some of the properties of the two products may overlap, the different source of the starting materials necessitates that there are nevertheless differences between the product of the invention and the kaolin disclosed by Fanselow.

The Examiner specifically points out that claim 1 of Fanselow is not limited by a source of Kaolin, and therefore the Examiner concludes that the claim broadly read includes any Kaolin including Chinese kaolin. Claims are always interpreted and given life in light of the specification. Fanselow clearly only mentions hard kaolin clays and by way of example mentions kaolin from Georgia and South Carolina (col. 4, ln. 23-25). Such hard kaolin clays are substantially or about 90% composed of particles finer than 2 microns,

The current invention teaches using starting material of kaolin substantially or about 90% composed of particles of about 75 microns and of as little as 0.01% finer than 2 microns (col 4, ln. 3-10). Fanselow specifically teaches away from using Chinese kaolin as disclosed in the invention. While claim 1 of Fanselow is not expressly limited by source of the starting material, claim 1 is instead limited by "said pigment being composed of particles substantially all of which are finer than 5 microns." The specification contains no teaching of pulverizing the kaolin to reduce particle size; therefore, the particle size limitation in claim 1 should be interpreted as limiting the starting material as having particles substantial all of which are finer than 5 microns, as taught in the specification. In this light, claims 20-22 of the invention DO NOT read on claim 1 of Fanselow.

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VI. Conclusion

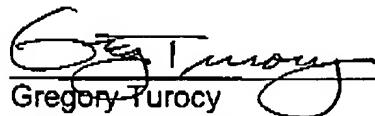
The present application is believed to be condition for allowance in view of the above comments and amendments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063.

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicant's undersigned representative at the telephone number listed below.

Respectfully submitted,

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